

GREAT MEADOWS NATIONAL WILDLIFE REFUGE

CONCORD, MASSACHUSETTS
NARRATIVE REPORT
SEPT-----Dec, 1958

Refuge Personnel

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Refuge Assistant

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*Orig. to C.O.
1/28/59.
eng.*

NARRATIVE REPORT

GREAT MEADOWS NATIONAL WILDLIFE REFUGE

CONCORD, Massachusetts.

SEPTEMBER OCTOBER NOVEMBER DECEMBER 1958

I GENERAL

A. Weather conditions

The following information was furnished by the 6th detachment, 4th Weather Group, Lt. W. Hanson Field, located in the town of Bedford, Massachusetts and about one mile from the Refuge.

PRECIPITATION

TEMPERATURES

<u>Month</u>	<u>Snowfall</u>	<u>Precip. this month</u>	<u>Normal</u>	<u>Max</u>	<u>Min</u>
September	0	6.71	2.40	89	40
October	0	2.90	2.13	81	34
November	1	3.77	4.49	68	1
December	5.3 in	2.07	3.59	50	-2
		<u>15.45</u>	<u>12.61</u>		

Precipitation for the month of September was one of the highest on record. One storm of the 28th deposited 2.57 in of rainfall in a 24 hr. period. There were 10 days of rainfall this month. Rainfall for October was about normal, and November below normal. December proved to be below normal.

B. Habitat conditions

1. Water Water levels remained above spillway level with both marshes full. A slight increase in volume of water passing the spillways was noted during this period.

2. Food and cover . Both Marshes produced heavy vegetation, and produced a good supply of waterfowl food. Vegetation consisted of Typha, Zizania, Pontedria, Sparganium, Scirpus, Iemna polygonum, Pontegeton, Nymphoenthus and Nymphaea. Upland areas produced acorns, Grapes, wild cherry, blue berry, hickory nuts and Ash.

The Grapes are of the "Concord Grape Variety" but have not been cultivated for a number of years.

The oak trees produced the best seed this period, in the uplands. Smartweeds produced well on the dry marsh sections, and along the roads. Zizania produced the best in the marsh.

II WILDLIFE

A. Migratory Birds

During the first part of this period a slight increase was noted in the migratory birds and this trend continued until the first gunning season the middle of October. The duck population dropped considerably after one day of shooting, and increased only after the hunting pressure dropped.

The middle of October we had about 6,000 ducks, 42 Canada Geese, 500 Florida Gallinules, 200 rails and 200 American Coot. The Gallinules left ~~out~~ during the next week but the American built up to 500 birds during the first week in November.

Mourning Dove population reached its peak during the week of October 26th to November 2nd. Peak population on the Refuge 300 Doves. The first week in December there were still about 25 Mourning Doves, but they were gone after this period.

The 42 Canada Geese that used the Refuge, are part of the colony Goose flock of about 160 birds. These birds have lost the urge to migrate and remain in the vicinity of the Refuge where they are being fed by some of the large estates

During the last week in December, 29 were on the ice in the upper pool.

Two Great Blue Herons are here now. The open water of the spillways, and the fish life there seem to ~~attract~~ attract these birds.

The second week of December five rails were observed under the filter bed banks. The soil there, seldom freezes, and some open water and bare ground exists.

There were two Wood-ducks and five Black ducks in the open water of the spillway until the second week of December. One wood-duck was unable to fly and fell prey to a fox. The five Black ducks, have joined the captive flock of ducks at Bordons pond, where feeding is being done.

The last American Bittern was observed during the week of Oct 26th.

Predation loss during this period was low. Red Foxes took the crippled wood-duck and one from Bordons pond that had been wing-clipped.

The Red-winged Blackbirds, Grackles and Cow Birds increased during the last week of ~~November~~ October and about 1500 birds were here, during this week.

The shore birds population was at its peak during the first week of October. We had a peak of about 100 birds, Sandpipers Killdeer and other species. These birds were almost all gone by the middle of October.

The last Least Bittern was observed during the last week of September, and Black-crowned Night Herons were seen at this time.

Pied-billed grebes were scarce as the peak population was 10, during the last week in October and decreased rapidly during the next two weeks.

B. Upland Game Birds

Ring-neck Pheasants at the beginning of this period were few in numbers on the Refuge proper. However after a few days of the open season, the Refuge population increased to about 100 birds. One covey just across the river would fly into the Refuge at the first sign of any hunting activity. There are about 50 birds in this covey. Sex ratio seems to be about even.

C. Big Game Animals

During the first part of this period 6 White Tail Deer were in the vicinity of the river boundary and along the upland side of the Refuge. These animals were observed to cross the river two days before the hunting season, and have not returned. The reports are that 12 Bucks were taken on the North side of Concord, and the South side of Carlisle.

D. Fur Bearers, Predators and Rodents, other mammals

During this period a house count was taken to determine the population of muskrats on the Refuge. 25 Houses were counted in the lower pool and 19 in the upper pool. Trapping started with one share trapper, and a total of 159 muskrats were taken. The Government's share amounted to 62 pelts. During the first part of this period, a Red Fox was observed hunting mice along the edge of the dike. Refuge Assistant walked within four feet of the animal. He did not appear to be frightened. Refuge Assistant went back to the truck and obtained a long handle shovel for a weapon, and returned to do in the Red Fox. Refuge Assistant holding the shovel up in a striking position approached the Fox. The Fox held his ground and let the Refuge Assistant get within striking distance. Down came the shovel, the Fox jumped to one side, strike one. Again the shovel went up and down, the Fox merely jumped aside. The next time the handle broke. Refuge Assistant took off to run the Fox down with the shovel handle for a club. Fox eluded his pursuer, running off through the Marsh. The following day the Refuge Assistant took a 22 rifle and with the hope that a shot might be obtained went to the Refuge. After three days of waiting the Fox was caught on the Dike and chase was given with the pickup truck. When the truck would get within a short distance of running over him, the Fox would get in the edge of the marsh, but as soon as the truck would stop he would run again. After a merry chase he was finally dispatched.

During this period Squirrels were very active. The Grey Squirrel population is very high. Some Pine Squirrels are also on the Refuge. The Share Trapper, observed some Otter sign and caught two Raccoons and one Great Horned Owl. Fox Sign has been observed in the snow during the last part of this period but none sighted.

HAWKS EAGLES OWLS CROWS RAVENS MAGPIES

Two Marsh Hawks remained in the vicinity of the Refuge until the last month of this period. About 25 Crows are present now. One Great Horned Owl still remains.

*Has they fox didn't have
share handle or gun for*

F. Other Birds Nothing to Report this period

G. Fish No Fishing is allowed on the Refuge. Some good fishing is to be had in the Concord River adjoining the Refuge.

H. Reptiles The Water snakes went into hibernation during this period as did the turtles.

I. Diseases No evidence of any disease during this period.

III REFUGE DEVELOPMENT AND MAINTENANCE.

A. Physical Development

During the first part of this period the log building located near the northeast corner of the lower marsh was finished. A front was installed, tie rafters, holes cut in the log sides and three windows, with heavy shutters were constructed. A eight foot door by ~~7~~ seven foot six inches high, (overhead) was installed, with a plywood shutter to conceal the windows in the door.

The rotary brush cutter with a Farmall tractor, was sent from the Parker River Refuge, and used to mow brush and sprouts along the boundry line. The inside of the boundryline fence was mowed by hand. One laborer from Parker River was also sent along with the equipment. There were several places where this equipment would not work, due to the stumps and stones. The truck trails were also mowed.

The mowing machine, a Case side mower, was sent down and the grass mowed on the dikes. Refuge Assistant from Parker River was the operator.

The boundry line fence was repaired where vandels had cut the fence and additional post erected where some trails entered.

The inside of the front wall was finished with cedar panels and the front, window frames and shutters were painted.

The Refuge boundry line was reposted. some signs that had been worn or marked were removed and new posters installed.

The River boundry line was reposted from a canoe. Signs that were worn or marked were replaced.

The boundry line along the Filter beds were posted on trees until fence can be finished.

The third month of this period was spent in burning brush piles, and cleaning up. Some of the largest tree tops were hauled to the brush pit with the D-4 Cat.

The fourth month one man was sent down from Parker River Refuge and the boundry line under the filter bed bank was completed. Fence post were driven, and wire strung and stretched along this area.

About 2 acres of trees and brush were cleared and burned around the log Building, so that a lawn can be made this Summer.

A kerosene stove, from the ~~Brigantine~~ Brigantine Station was brought here and installed in the log building. A 275 gal

storage tank for oil was purchased and installed. A hole was cut in the roof, and a roof jack installed. A work bench was constructed, a tool board installed, a storage cabinet from G.S.A. surplus was set in the building. A desk and typing chair obtained from the Missisquoi station was put in the building. A machinest vise from the Parker River station was repaired and sent here.

Routine maintenance was performed on the D-4 Caterpillar, chain saw, brushette, small tools and the trucks.

Refuge Assistant spent eight days of this period at the Parker River station, on Deer patrol, and dog trials.

B. Plantings

1. Aquatic and Marsh Plants

None

2. Trees and Shrubs

None

3. Upland Herbaceous Plants

None

4. Cultivated Crops

About one acre of Winter Rye, with a mixture of grass seed was planted by hand around the lower spillway, and in front of the log building. The planting around the spillway on new fill was to help prevent erosion. The planting in front of the log building was to help prevent sprout growth and establish a lawn.

C. Collections and Receipts

1. Two bushels of Winter Rye, and 25lbs of mixed grass seed was received from The Parker River Station.

2. Specimens

None collected this period.

D. Control of Vegetation

The small brush along the dikes and around the buildings, and along the fence line were sprayed with "4T Ester Brush Killer" June 3rd, 4th, 12th. Water was used as a diluent and used at a ratio of 1:25 and applied at the rate of 40;14% acid equivalent per acre. Brush species consisted of salix nigra, salix amygdolides with some small acer rubrum. A hand sprayer, three gallon garden sprayer was used in spot applications on about five acres. Laundry detergent was used as a sticking agent. Success was negligible.

The Same area was again sprayed Aug-1, Aug 12th and Sept 23rd. At this application Diesel fuel was used as a diluent and applied in the same manner.

About 90% of the vegetation started turning in one days time, and in two days time had completely turned brown. This brush was then cut during the month of November. We will not know if complete kill resulted, until next spring.

A table of spraying activities follows with data concerning acres sprayed, species, cost, man hours, application percentage and other data. Final results will be listed in the December report 1959.

Species	Date	floral development	acres	man hours	cost per acre
Salix nigra		full leaf			
Salix amygdolides		full leaf			
acer rubrum	6/3	full leaf	1	2	\$4.70
	6/4		2	4	\$4.70
	6/5		2	4	4.70
	8/1	full leaf	2	4	\$ 4.34
	8/12	full leaf	2	4	\$ 4.34
	9/23	full leaf	1	2	\$ 4.34

Diluent	ingredient	immediate kill results	ratio	per acre acid equiv
Water	6/3 4 T Ester	10 %	1:25	40:14%
Water	6/4 4 T Ester	5 %	1:25	40:14%
Water	6/5 4 T Ester	5 %	1:25	40:14%
Diesel	8/1 4 T Ester	90 %	1:25	40:14%
Diesel	8/2 4 T Ester	90 %	1:25	40:14%
Diesel	9/23 44T Ester	90 %	1:25	40:14%
Total Acres	Total Man hours	total cost per acre	total cost	
5	20 hrs	\$ 9.04	\$ 45.20	

E. Planned Burning
None this period

F. Fires
None this period

IV RESOURCE MANAGEMENT

A. Grazing
None

B. Haying
None

C. Fur Harvest

During this period a muskrat house count was made and a total of 44 muskrat houses were counted. A share trapper was contacted, and put under agreement on a 60:40 share basis. All Raccoon and Fox pelts to be kept by the trapper.

Number Houses	total population	total catch	trappers share	Govt share
44	220	159	97	62
No. Small	No. Med	No Large	Total	
23	66	60	159	

D. Timber Removal

None

Commercial Fishing

None

F. Other Uses

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report

Nothing to report this period

VI PUBLIC RELATIONS

A. Recreational Uses

Public use in this calender year started this spring as soon as the first birds arrived.

Many visits were made by members of the Audubon Society, nature study groups, and students. The Hathaway School of Conservation were here about every weekend. Several students from Tufts with their instructors made trips here this spring and fall. Two transfer students from Dover England, attending M.I.T. visited here the last week in October. All heavy public use occurred during the months of March, April, May, June, July August, September, October, and the first two week in November. Light use of the area occurred the last of November, December. and the first part of this calendar year.

Month	Visitor days
January	50
February	50
March	200
April	200
May	500
June	600
July	600
August	700
September	475
October	300
November	100
December	50
Total visitor days	3,825

B. Refuge Visitors

In addition to the above visitors listed, the following Official visitors were here.

Refuge Manager Parker River Refuge was here at least 15 times during this period, and Refuge Assistant Stubbs once. Refuge Assistant Stanwood was here three times.

Oct 9	J. Dolan	Concord P.D.	Concord	Investigation
Oct 9	J.J. Healy	F.B.I.	Boston	Investigation
Oct 31	Agent Snow	F&W.S.	Dover Pa.	Patrol
Oct 31	Agent VanWeldon		Plymouth	Patrol
Oct 20	Samuel Hoar Jr.	ATTY	Boston	Hunting
Oct 20	C. V. Greeno	, Farmer	Carlisle	"
Oct 24, 25, Nov 1, and Nov 8th,	Mr Hoar and Mr Greeno hunted.			
Nov 15,	Dr. L Grisholm-Research Station Boston, visit			
Dec 4	C. Girard	F.B.I.	Boston	Investigation
Dec 4,	C. Boardman	Concord P.D.	Concord	Investigation
Dec 14	C. Girard	F.B.I.	Boston	Investigation.
Oct 27	D. Grice	State Game Bio.		Visit
Oct 27	Grices Assistant			Visit

C. Refuge Participation

Refuge Assistant attended Deer Season Archery shoot at Parker River Refuge. Worked at checking station and on patrol.

D. Hunting

This small Refuge was given to the Government with stipulation that Mr Hoar and Mr Hoar Jr. with one friend could shoot the marsh. Mr Samuel Hoar 1 is now deceased. Mr Hoar Jr. and Mr C. V. Greeno hunted four hours Oct 20, 24, 25, Nov 1 and Nov 8.

Date	Hr. Hunted	take
Oct 20	4	6 Black duck, 2 Baldpate
Oct 24	4	8 Black duck
Oct 25	4	6 Black duck
Nov 1	4	6 Black duck, 2 Baldpate
Nov 8	4	4 Black duck, 4 Baldpate.
	20 hrs	30 Black duck, 8 Baldpate

It took 40 hours to take 38 ducks, not as good as some hunters on the outside were taking. It should be taken into consideration that Mr Hoar and Mr Greeno were pretty choesey about their birds taken.

E. Violations

There were no Federal law violations this period. There were six Town and State law violations. The Concord Police Department, by diligent patrol of the adjoining lands keep violators and violations to a minimum. This Department has co-operated with our Service to the fullest extent.

VII OTHER ITEMS

A. Items of Interest

During this period two break and entries were made into the log building, located on the Refuge. The first entry was made at the beginning of the period. A pane of glass was removed from the front window, and almost all of the equipment stored in the building removed.

A canoe, chain saw, gasoline can and all of the small hand tools were taken. The Refuge Manager, Concord Police Department, and F. B. I. were notified.

F.B.I Agent J.J. Healy and one local Officer investigated the case. No Fingerprints could be found, on the windows or doors.

In looking for something of value, it was discovered that two of our T.A. help who had worked here last year, had Police records. These men were picked up and questioned. Nothing could be proved to implicate them.

About three weeks later the Refuge Assistant noticed something red over in the brush, and upon examination, located the Chain saw, and the gas can hidden in some brush. Further scrutiny disclosed the rest of the equipment. This was brought to the Police Station, and gone over for prints. Two prints were found and lifted. They are not on record, so are of very little value.

Agent Healy then closed the case as all of the equipment had been recovered.

During the last month of this period, the building was again broke into. The Chain saw, and Brushette, and Fire Extinguisher was taken. Again the proper officials were notified. Agent Girard was assigned the case. Refuge Assistant dusted for prints while waiting for Officers to arrive. One palm print was found.

The following day, the Refuge Assistant noticed some foot prints in the newly fallen snow, and followed them. One set of prints went directly to the Gas can and Chain saw. An attempt had been made by the wearer of the boots to cover the saw with snow, and moved the gas can in behind a log for better concealment. The tracks were followed and led to a residence about one half mile from the Refuge boundry. Refuge Assistant talked to the man who lived there, and he informed the Refuge Assistant that only he and his son lived there. His son was about 40 yrs and worked every evening. The rest of the neighborhood was given a house to house canvas, and it was disclosed that there was a teenager who resided in the first house, where the tracks had gone into. It was also found that three teenage boys, partners of the boy in question, were seen coming home about dusk, from the direction of the Refuge.

Agent Girard and Refuge Assistant questioned the boy in front of his mother, and he told several stories, all of them different. The other two boys were also questioned. They denied any knowledge of the first boy being with them, in the Refuge, and stated he had joined them after leaving.

The evening of the 5th of December the boys and their parents were brought to the Police Station. The two boys that had been together were sent home after some questions. The other lad was questioned further in front of his father. He at first denied even being in the Refuge and stuck to his story pretty well. He finally broke when he was confronted with the boot tracks, that corresponded with the boots he was wearing. and admitted that he had seen the Saw and can, but was frightened, and kicked snow over the Saw, and rehidden the Gas can.

He stated that his reasons, for this action was fear, that he might get in trouble. He denied any knowledge of the rest of the equipment, and of the break and entry.

December the 14th the Brushette was located by two young er lads and they took it home, and their father called the Bedford Police Department, and turned in the Saw.

When these boys showed Refuge Assistant Holderby where they had located the Brushette, it was where a careful search had been made by Refuge Assistant, and a T. A. Employee Dec. 9th. It can be assumed that the saw was put there after the search.

We can also assume that the Fire Extinguisher will be found in this locality.

Agent Girard and Assistant Holderby feel that the first lad questioned had prior knowledge of where the saw was hidden. Agent Girard also feels that after the experience the lad went through, he might grow up to be a useful citizen.

B. Photographs

During this period some 35MM slide photographs were made of this area, and of some of the activities on the Parker River Refuge. Some Black and white prints will be submitted with the next reporting period.

There are none ready for this report.

DATE Jan 1959

PREPARED BY Ralph H. Holderby
Refuge Assistant

SUBMITTED BY ST. Reg. Mgr.
Refuge Manager

APPROVED Arthur M. M. 1-21-59
Reg Refuge Supervisor

Regional Director

W A T E R F O W L

REFUGE GREAT MEADOWS NATIONAL WILDLIFE REFUGE

MONTHS OF SEPT TO DEC 31, 1958

(1) Species	(2) Weeks of reporting period									
	9/1-7: 1	8-14: 2	15-21: 3	22-29: 4	29-10/5: 5	6-12: 6	13-19: 7	20-26: 8	27-11/2: 9	3-9: 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	42	42	42	42	50	50	50	42	42	42
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	10	50	50	50	75	100	100	100	75	10
Black	65	225	225	250	350	2000	1500	350	300	200
Gadwall	2	2	2	2	2	2	2	2	2	
Baldpate	50	100	200	300	400	2000	2000	2000	2000	2000
Pintail					50	100	150	100	25	5
Green-winged teal	50	50	50	50	75	100	150	100	25	5
Blue-winged teal	100	225	225	225	225	250	300	50	50	10
Cinnamon teal										
Shoveler										
Wood	600	700	750	800	800	800	800	800	600	350
Redhead				10	10	25	100	5	5	
Ring-necked						5	25	5	5	
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:						25	200	250	500	150
Int. Dup. Sec.,										

3 -1750a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE GREAT MEADOWS N. W.MONTHS OF Sept. TO Dec. 31, 19 58

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	10 - 16	17 - 23	24 - 30	31/1-7	8 - 14	15 - 21	22-28	29 - 31		
	11	12	13	14	15	16	17	18		
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	30	30	30			30		29	4035	
Cackling										
Brant										
White-fronted										
Snow										
Blue			1						2	
Other										
Ducks:										
Mallard	25	25	50	35					5285	
Black	200	200	175	70	25	5			42980	
Gadwall	2								140	
Baldpate	150	150	50	10					79870	
Pintail	50	50	10						3780	
Green-winged teal									4585	
Blue-winged teal	10	10							11760	
Cinnamon teal										
Shoveler										
Wood	100	100	10	5					50505	
Redhead	10	10	5						1260	
Ring-necked	5	5	5						385	
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	125	75	5	5					9345	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	4042	50	
Ducks	200550	5052	
Coots	9345	500	

SUMMARY

Principal feeding areas ~~Both pools in the Refuge~~ about
~~200 acres~~

Principal nesting areas Marsh edge, and Wood duck
nesting boxes

Reported by Ralph H. Holderby

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)Refuge GREAT MEADOWSMonths of SEPT to DEC 31 1958

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Great Blue Heron	3	5/6	5	9/20	2	12/31				
Virginia Rail	3	5/6	50	10/1	2	12/9				
Sora Rail	5	9/1	50	10/1	3	12/9				
Florida Gallinule	5	5/20	500	10/20	5	11/1				
Eastern Green Heron	1	5/25	2	9/22	1	10/1				
American Bittern	1	5/4	15	9/2	1	10/1				
Least Bittern	1	7/30	5	9/2	1	10/1				
II. <u>Shorebirds, Gulls and Terns:</u>										
Herring Gull	50	5/1	100	6/25	2	12/9				
Black Tern	4	6/15	4	6/15	4	7/4				
Killdeer	5	8/10	25	9/22	2	11/1				
Least Sandpiper	2	6/15	50	10/1	2	11/1				
Wilson's Snipe	2	6/31	15	10/1	1	11/1				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	2	3/1	300	10/20	25	12/2			
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle									
Duck hawk									
Horned owl									
Magpie									
Raven									
Crow	15	5/1	25	9/20	25	12/31			
Marsh Hawk	2	5/2	4	10/21	4	10/28			
Great Horned Owl	1	11/9	2	11/10	2	11/10			
Reported by <u>Ralph H. Holdarby</u>									

INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)
 II. Shorebirds, Gulls and Terns (Charadriiformes)
 III. Doves and Pigeons (Columbiformes)
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total n of the species using the re during the period concern

UPLAND GAME BIRDS

Refuge GREAT MEADOWS Months of SEPT to DEC 31, 1958

(1) Species Common Name	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total		Hunting	For Re- stocking	For Research		
Ring-neck Pheasant	Upland Hard- wood, White Pine and Marsh edge				40:60				100	observation
Ruffed Grouse	Same	50							1	observation

Pertinent information not
specifically requested.
List introductions here.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-175
Form NR-3
(June 1945)

BIG GAME

Refuge GREAT BRANCHES Calendar Year 1958
1958

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
White Tailed Deer	54 Acres of hard wood and white pine; marsh edges	3										6	9	
SMALL REFUGE -- DEER MOVE IN AND OUT -- HAVE NOT BEEN OBSERVED SINCE HUNTING SEASON.														

Remarks:

Reported by Ralph Holderby

INSTRUCTIONS

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge GREAT WEAVERS

Year 19 58
~~59~~

Botulism

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) _____

Condition of vegetation and invertebrate life _____

Remarks _____

None Noted

Lead Poisoning or other Disease

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

None Noted

PUBLIC USE

Refuge GREAT MEADOWS

Calendar Year 1958

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
3825	10		3815

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous:	Percent	Visitor-Days
Waterfowl	<u>100</u>	<u>10</u>	<u>200</u>	Recreation *	<u>100</u>	<u>3815</u>
Upland Game	<u> </u>	<u> </u>	<u> </u>	Official	<u>Tr.</u>	<u> </u>
Big Game	<u> </u>	<u> </u>	<u> </u>	Economic Use	<u> </u>	<u> </u>
Supervised by refuge <u>X</u> by State <u> </u> No. of blinds <u> </u>				Other	<u>Tr.</u>	<u> </u>

Hunting (off
refuge lands): Estimated man-days of hunting on lands
adjacent to the refuge 1500 (These figures
should not be included in hunting-use totals above).

Fishing:

Acres of ponds or lakes None and miles of streams
 open to fishing.

Comments:

*(including picnicking, swimming, boating,
camping, viewing wildlife, and photographing)

3-1757

Form NR-7
(April 1946)PLANTINGS
(Marsh - Aquatic - Upland)Refuge GREAT WOODS Year 1955

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Winter Rye	Dike 5 Lawn	1 bu/A	1 /A.	1 bu seed	8/28	85%	Poor Soil	
Mix Grass Seed	Dike 4 Lawn	25 lbs/A.	1 /A.	25lbs seed	8/ 28	90%	Poor Soil	

TOTAL ACREAGE PLANTED:

Marsh and aquatic.....

Hedgerows, cover patches.....

Food strips, food patches.....

Forest plantings.....

Dike 4 Lawn 1/A.

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge GREAT MEADOWS County ESSEX State MASSACHUSETTS

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
								Winter Rye & Grass	1/A.
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				1/A.
Hay - Wild				2. Acreage Cultivated as Service Operation				1/A.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1759
Form NR-9
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING S
(Seeds, rootstocks, trees, shrubs)

Refuge.....~~GREAT MEADOWS~~..... Year 1948

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period or Collection	Method	Unit Cost	Amount	Source		
Wix Grass Seed					25 lbs	Parker River	None	
Winter Rye					2 bu.	Parker River	1 bu.	

TIMBER REMOVAL

Refuge..... Year 194.....

GREAT MEADOWS

7

[illegible]

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....